tention to the patient, or to a disregard for the importance of other aspects of therapy. Tetanospasmin is presumably slowly metabolized from its binding sites in the nervous system and probably does not cause permanent structural damage. The objectives of therapy are to provide continuous supportive care to the patient while this event is taking place, and to prevent additional toxin from reaching the nervous system by the prompt administration of antitoxin, surgical excision of infected foci, and the use of antibiotics.

Antitoxin is inactive, and antibiotics are unreliable against spores of Clostridium tetani. Since the disease does not induce natural immunity, concurrent active immunization with tetanus toxoid is also indicated. Such immunization is particularly important when the infected site cannot be identified and surgically excised, as is illustrated by the case reported upon herein and nearly 7 percent of all cases in the United States.[1]

The usefulness of diazepam as an adjunctive agent in the management of moderate or mild tetanus cases seems clearly established, but the significance of this drug on the mortality of tetanus among cases in this country has yet to be established.

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Inborn Errors of Metabolism

IT IS NOW NEARLY seventy years since the first publication of Garrod's studies on alkaptonuria[1] opened the field of human biochemical genetics. It is of some interest for the history of medicine and science that these beginnings were clinical, with the careful observations of his patients by a scholarly physician. Garrod coined the term *inborn errors of metabolism* in the title of his book.[2]

These disorders are relatively rarely encountered. However, from the beginning they have been of significance far out of proportion to their incidence. It was from the study of inherited disorders of amino acid metabolism that the idea was first conceived that one gene determines the structure of an enzyme protein.[2] It was also in this context that the concept of genetic determination of human variation was first clearly expressed.[1,2] Elsewhere in this issue of CALIFORNIA MEDICINE, Menkes has reviewed the status in 1971 of the disorders of amino acid metabolism. It is clear that these disorders continue to contribute to our understanding of health and disease.

The rate of discovery of new diseases promises continued excitement in this field. Recently, this has been particularly true for anomalies in the metabolism of the branched chain amino acids, a field of inquiry that was opened by Menkes with his description of maple syrup urine disease. Many of these disorders present with a picture of overwhelming illness very early in life, and if they are undiagnosed or untreated the patients seldom survive the neonatal period. These findings have focused attention on the newborn intensive care unit as a place where more metabolic diseases may be waiting to be discovered than in institutions for the mentally retarded.

The types of methodology employed in this field are changing too. Most of the early discoveries in the inborn errors of metabolism depended on the fact that amino groups react with ninhydrin to produce a readily detected purple color. This is the fundamental principle of the detection of amino acids whether by chromatography on paper or thin layer or by the automatic amino acid analyzer. It is probably true that the major proportion of what can be discovered using the ninhydrin reaction has already been discovered. On the other hand, in the catabolism of most amino acids one of the earliest steps results in the loss of the amino group. Therefore, inborn errors of the subsequent metabolism of these amino acids might make up the majority of such disorders. Their detection

would require the appreciation that compounds are accumulating behind an enzymatic block that do not stain with ninhydrin. Laboratories active in this pursuit now rely heavily on the gas chromatograph. We have found that an automatic organic acid analyzer is also useful, but we have had to construct this ourselves. An almost indispensable, but very expensive, item in a modern laboratory for the study of inborn errors of metabolism is a gas chromatograph linked to a mass spectrometer. This instrumentation has already quickened the pace of discovery.

Phenylketonuria (PKU) has been considered in detail by Menkes. This disease provides a rather comprehensive model for other inborn errors of metabolism. The fundamental defect, in phenylalanine hydroxylase, is known, as is the autosomal recessive mode of inheritance. Definitive diagnosis is quite readily made, although it is not as easy as it might have seemed five years ago. Experience indicates that there are a number of hyperphenylalaninemias which differ significantly from classical PKU. Variation of this type is becoming clear in virtually all of the inborn errors of metabolism.[3] It is what one would expect. We can extrapolate from the genetic variation that codes for over 100 different hemoglobin proteins. There could be a similar degree of variation in primary structure for any protein in the body. In the case of enzymes, more than a few of these variants may lead to metabolic disease. Effective treatment is available for those diagnosed. This is not as easy, either, as it might have appeared theoretically. However, it is clear that patients diagnosed in the newborn period and managed properly, with sufficient phenylalanine to meet its requirement as an amino acid essential for growth, but essentially no more, end up with an impressively normal intelligence. Screening programs are now active in most states for the detection of every patient with PKU in the first days of life. The program in California is one of the best.

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A Critique

The California State Plan For Health

TO THE PHYSICIAN engaged in the private practice of medicine, the recently approved California State Plan for Health is met with mixed emotions. Those of us who were concerned with the development of the required document were aware that it was necessary to fulfill federal requirements for funding comprehensive health planning activities under P.L. 89-749 in our state.

Those who drafted the plan believe California's document is good in comparison with other states' plans, but also perhaps a somewhat premature exercise. The plan is an effort to deal with the multitude of problems pertaining to health in our state. It does help to identify major barriers to the achievement of certain goals and some methods of overcoming these barriers.

We should recognize that an opportunity was given to the most concerned people—physicians, planners, researchers, consumers—to present their "bit," and to have some input. Theoretically conclusions were derived from 240 position papers, some 4000 recommendations, and over 400 pages of record. Through the democratic process, many meetings and hearings were held. It is difficult to estimate the cost of the hearings, meetings, and position papers in terms of dollars and man-hours of time. But from these meetings and hearings, one would expect the conclusions and recommendations of the report would reflect those documented opinions and reports. Unfortunately on some issues one might say, "They listened, but they didn't hear."

One of the primary deficiencies in the state plan is the lack of accepted input from the private practitioners of medicine and dentistry. A second